



## UNITED STATES DEPARTMENT OF COMMERCE

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.
08/813,200	03/07/97	HIRANO	M 2342-0107P

002292 MMC2/1122  
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EXAMINER

RAO, S	ART UNIT	PAPER NUMBER
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2814  
DATE MAILED:

11/22/00

Please find below and/or attached an Office communication concerning this application or proceeding.

Commissioner of Patents and Trademarks

<b>Offic Action Summary</b>	Applicat ion No.	Applicant(s)
	08/813,200	HIRANO, MITSUHIRO
	Examiner Steven H. Rao	Art Unit 2814

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM  
THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) Responsive to communication(s) filed on \_\_\_\_\_.
- 2a) This action is FINAL.      2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) Claim(s) 10,11,16 and 18 is/are pending in the application.
  - 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) Claim(s) \_\_\_\_\_ is/are allowed.
- 6) Claim(s) 10,11,16 and 18 is/are rejected.
- 7) Claim(s) \_\_\_\_\_ is/are objected to.
- 8) Claims \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on \_\_\_\_\_ is/are objected to by the Examiner.
- 11) The proposed drawing correction filed on \_\_\_\_\_ is: a) approved b) disapproved.
- 12) The oath or declaration is objected to by the Examiner.

**Priority under 35 U.S.C. § 119**

- 13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d).
  - a) All b) Some \* c) None of:
    1. Certified copies of the priority documents have been received.
    2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
    3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.
- 14) Acknowledgement is made of a claim for domestic priority under 35 U.S.C. & 119(e).

**Attachment(s)**

15) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	18) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s) _____
16) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	19) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)
17) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____	20) <input type="checkbox"/> Other: _____

**DETAILED ACTION**

Applicants' amendment filed September 07, 2000 ( entered September 13, 2000) has been entered.

Therefore claims 11 and 18 as amended by the amendment of September 07, 2000 and claims 10 and 16 as amended by the amendment of February 22, 2000 are currently pending in the application.

As per the Applicants' request on page 4 of the amendment of September 07, 2000 the finality of the outstanding Office Action is withdrawn and a new Non-Final rejection is enclosed herewith.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 10-16 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. The omitted structural cooperative relationships are: how the local exhaust is connected at the end not connected to the load lock chamber, and how is the local exhaust line pressure maintained to be similar to that of the atmosphere. See *In re Venezia, 530 F.2d 956, 189 USPQ 149 (CCPA 1976); In re Collier, 397 F.2d 1003, 158 USPQ 266 (CCPA 1968)*.

Claim 16 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention, because of the language, " a local exhaust, connected with said first vacuum exhaust line and not connected with said load lock chamber, for locally exhausting a dust generating portion of said moving mechanism".

Previously the above language was rejected as being unclear because is what not clear, what else the local exhaust is connected to beside the first vacuum exhaust line. Applicant responded to this rejection by arguing, " the Examiner confuses breadth with indefiniteness in this rejection."

The above rejection is maintained and repeated because the Applicant has not understood the rejection. The previous rejection and the present one is based on the fact that the Applicant in claims 10,11, 16 and 18 recites that the chamber exhaust which includes the an atmospheric pressure vent line and a vacuum exhaust line connected to a vacuum pump and pressure at one end of the atmospheric pressure vent line being substantially equal to the atmospheric pressure . Therefore it not clear whether the atmospheric pressure vent line is connected to anything else that maintains it ( i.e. the end not connected to the vacuum exhaust line) at atmospheric pressure or the pressure is maintained equal to atmospheric pressure by some other means. Therefore the failure to positively recite the elements necessary ( the connections or other means) to perform the function of maintaining the atmospheric pressure vent line substantially equal to the atmospheric pressure recited in the claim makes the claim indefinite.

Applicant is reminded of the provisions of MPEP Section 2172.01 and 2173.05

(g) , " A claim which fails to interrelate essential elements of the invention as defined by the applicants in the specification may be rejected under 35 USC 112 , second paragraph , for failure to point out and distinctly claim the invention. Herein the rejected claim fails to interrelate the essential terms ( to the function stated in the claims).

Claims 11 and 18 recite similar language.

Claim 16 is also rejected on the ground that claim 16 recites the second and third vacuum lines are connected with the substrate processing chamber and the first vacuum line. These connections are not supported by the specification as originally filed.

The Specification if figs. 1,2, etc. and specification pages 8 lines 15 –20 and 24 lines 2-5 show and describe a third and fourth vacuum lines being connected to the moving mechanism chamber 52 ( fig. 1) . Therefore the recitation of the second and third vacuum lines are connected with the substrate processing chamber is not supported by the disclosure as originally filed.

It is suggested that Applicants' recite that the second and third vacuum lines are in communication with the wafer processing chamber through the moving mechanism chamber or such positive recitation of the correct connections and communications to over come the above rejection.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 10,11, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Shiraiwa ( U.S. Patent No. 5,273,423, herein after Shiraiwa).

With respect to claim 10, Shiraiwa teaches a substrate processing apparatus comprising :

A substrate processing chamber for processing a substrate ( Shiraiwa fig. 2 ), A load lock chamber ( Fig. 2 # 8, col.3 line 68); a gas supply ( fig. 2 # 30, col. 4 lines 64-68) for supplying gas into said load lock chamber ; a chamber exhaust ( fig. 2 32, col. 5 lines 1-5) for exhausting the load lock chamber , said chamber exhaust including an atmospheric pressure vent line ( fig. 2 # 32d, col.5 line 9); and a vacuum exhaust line ( fig. 2 # 32, col. 5 lines 1-5 ) which is connected to a vacuum pump ( Col.4 line 68 ) ; pressure at one end of said atmospheric vent line being substantially equal to the atmospheric pressure ( fig. 2 # 32 d non connected end) and the other end of the atmospheric vent line being connected to the load lock chamber ( fig. 2 # 32 d connected to chamber # 8, col. 5 line 9 ); a moving mechanism ( fig. 2 # 22, col. 2 line 15) in said load lock chamber for moving the substrate; a local exhaust ( fig. 2 # 32 , col. 2 lines 55-58 col. 7 lines 65-66 ) for locally exhausting a dust generating portion of said moving mechanism ; flow rate regulators provided in the gas supply and local exhaust ( respectively (fig. 2, col. 4 lines 55-64 and col. 2 line 68) ; a first valve disposed at an intermediate portion of the vacuum exhaust line ( fig. 3 # 32 e col. 6 lines 28-30 ) ; a second valve disposed at an intermediate portion of the atmospheric pressure vent line

( Fig. 2 , col. 5 lines 39-40) ; a controller and a pressure detector for detecting pressure in the load lock chamber (col. 5 lines 24-32, describes introduction of purge gas e.g. N<sub>2</sub> till the pressure inside the process tube 4 and load lock chamber 28 are equalized therefore a pressure detector and a controller have to be present to measure and adjust the pressure in chambers 4 and 28 and adjust the pressure to equalize it) ; the first and second valves are controlled by the controller ( the first and the second valve have to be controlled by the controller so that a desired amount of purge gas remains in the load lock chamber and the process tube after the introduction of the purge gas in to the load chamber and the remaining gases can equalized ( pressure) ). Further more the recitation of the first and second valves are controlled by the controller does not patentably distinguish it over the prior art of record.

The Applicant is reminded that their efforts to distinguish an apparatus claim by adding limitations dealing with the functions of the elements e.g. controller controlling the valves, during movement of the moving mechanism by the moving mechanism and the amount of the gas supplied being greater than exhausted is not relevant because

**MPEP 2114** – Claims directed to apparatus must be distinguished from the prior art in terms of structure rather than function. *In re Danly 263 F.2d 844,847, 120 USPQ 528,531 ( CCPA 1959).* “ **Apparatus claims cover what a device is, not what a device does.** ( *emphasis in original* ) *Hewlett-Packard Co. V Bausch & Lomb Inc. 909 F.2d 1464, 1469, 15 USPQ 2d 1525, 1528 ( Fed. Cir. 1990).*

Calims 11, 16 and 18 also recite the above improper functional limitations.

All of the functional limitations in all of the claims are not relevant to patentability and therefore not considered.

The controller controls the first and second valves such that during the movement of the substrate by the moving mechanism the first valve is closed and the second valve is opened. (In order to maintain desired amount of purge gas in the load lock chamber the valve 32e in the vacuum exhaust line 32 has to be closed and the second valve in the atmospheric vent line is open col. 5 lines 29-32 while the substrate is moved by the moving mechanism see col. 5 lines 44- col. 6 line 5 and col.4 lines 60-65). Further more the recitation, "The controller controls the first and second valves such that during the movement of the substrate by the moving mechanism the first valve is closed and the second valve is opened " does not distinguish over the cited art without a showing of criticality or unexpected results obtained by the controller controlling the first and second valves during the movement of the substrate.

The gas supplied by the gas supply into the load lock chamber is controlled by the flow rate regulators to be greater than the exhaust amount from said local exhaust , ( As stated above for Shiraiwa's purge gas to remain in the load lock chamber the gas supply flow rate has to be greater than the exhaust rate ) and the gas supplied by said gas is exhausted by the local exhaust and the chamber exhaust ( col.5 lines 1-3).

With respect to claim 11, Shiraiwa teaches a substrate processing apparatus comprising :

It repeats all the elements of claim 10 and adds that the controller controls the flow rate regulator in accordance with a signal from said pressure detector ( As shown

under claim 10 above the first and the second valve have to be controlled by the controller so that a desired amount of purge gas remains in the load lock chamber and the process tube after the introduction of the purge gas in to the load chamber and the remaining gases can equalized ( pressure) further to equalize the pressure a pressure detector/sensor is required and based on the readings of the pressure detector/sensor the purge gas flow has to be adjusted / controlled by the controller to produce the same purge gas pressure in the process chamber and the load lock chamber- col. 5 lines 44- col. 6 line 5 and col. 4 lines 60-65).

With respect to claim 16, Shiraiwa teaches a substrate processing apparatus comprising :

Claim 16 repeats the elements recited in claims 10 and 11 above and further recites a second exhaust line which is connected to the device and the first vacuum exhaust line ( Shiraiwa fig. 2 # 32 b, col. 5 lines 5-9) and a third exhaust line connected to the load lock chamber (sic.) actually moving mechanism chamber device 52 and in communication with the load lock chamber and the first vacuum exhaust line (Shiraiwa fig. 2 # 32 c, col. 5 lines 5-9). Shiraiwa discloses the second and third vacuum exhaust lines connected to the transfer and cassette chambers 61 and 62, and the vacuum exhaust line.

With respect to claim 18, Shiraiwa teaches a substrate processing apparatus comprising :

Claim 18 repeats the elements if claims 10,11 and 16 and further recites a cover for covering a dust generation portion of the moving mechanism ( fig. 11 # 18 top

covering of the wafer boat or # 26 flange col. 2 lines 19 and 21 and col. Col. 2 lines 54-57 and col. 7 lines 64-66). The local exhaust being connected to a space covered by the cover the chamber exhaust being connected to the space. ( Fig. 2 # 32 and 32 d being connected to the space around cover # 26 or # 18). The gas supplied into the first region and then made to flow into the second region and then into the chamber exhaust and the local exhaust ( Fig. 2 gas supplied through # 30 is moved from top of 8( region 1) to the region around covers 26 and 18 ( region 2 ) and removed through chamber exhaust ( # 32 ) and local exhaust (32 d).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Steven H. Rao whose telephone number is 703-306-5945. The examiner can normally be reached on M-F, 8.00 to 5.00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Olik Chaudhuri can be reached on 703- 306-2794. The fax phone numbers for the organization where this application or proceeding is assigned are 703-308-7722 for regular communications and 703-308-7724 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703- 308-0956.



November 13, 2000

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